

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re patent application of

Applicant: Halliyal et al.  
Express Mail: ER054909488US  
Filed: September 5, 2003  
For: PREPARATION OF COMPOSITE HIGH-K/STANDARD-K DIELECTRICS FOR SEMICONDUCTOR DEVICES  
Art Unit: Not yet known  
Examiner: Not yet known

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1345

Sir:

1. Pursuant to 37 C.F.R. 1.97 and 1.98, and in compliance with 37 C.F.R. 1.56, the Office's attention is directed to the patents, pending applications, publications and other information listed on the attached PTO-1449. A copy of each listed document is enclosed except for: (a) pending applications or (b) those previously cited or submitted to the Office in the following application(s) upon which this application relies for an earlier filing date under 35 U.S.C. 120:

Serial No.: 10/051,790                      \_\_\_\_\_  
Filing Date: 01/17/02                      \_\_\_\_\_

Regarding any document, publication or other information for which a date is not given on the attached PTO-1449, Applicant(s) believe(s) the same may qualify as "prior" art to this application and should be treated accordingly, although Applicant(s) reserve(s) the right to contest the prior art status of any document, publication or information, should issue arise.

2. Regarding each listed document that is not in the English language, an English-language translation accompanies this Statement as indicated on the attached PTO-1449 or a concise explanation of the relevance of the document is set forth in the following document(s):

- (a) ☐ Copy of each English language version of a search report indicating the degree of relevance found by the foreign office of each document being submitted from the search report.
- (b) ☐ Attachment entitled "Concise Explanation of Relevance of Non-English Language Documents".

3. Pursuant to 37 C.F.R. 1.97(b) this Statement is being filed (one must be checked):

- (a) ☒ Within 3 months of the filing date, date of entry into the National Stage, or filing date of CPA.
- (b) ☐ Before the mailing date of a first Office Action on the merits. If this Statement is not filed before the mailing date of a first Office Action on the merits, the required certification is given below or, in the absence thereof, the Office is authorized to charge the required fee set forth in 37 C.F.R. 1.17(p) to Deposit Account No. 18-0988 for consideration of this Statement.
- (c) ☐ Before the mailing date of a first Office Action on the merits after a first or second submission after final rejection under 37 C.F.R. 1.129(a).

(d) \_\_\_ After the period set forth in 37 C.F.R. 1.97(b) but before the mailing date of either a final action or a notice of allowance.

(1) \_\_\_ The required certification is given below, or

(2) \_\_\_ Enclosed is a check covering the fee set forth in 37 C.F.R. 1.17(p) for consideration of this Statement, or

(3) \_\_\_ Charge the fee set forth in 37 C.F.R. 1.17(p) to Deposit Account No. 18-0988

(e) \_\_\_ After the mailing date of either a final action or a notice of allowance, but before payment of the issue fee. Petition hereby is made for consideration of this Statement and the required certification is indicated below.

(1) \_\_\_ Enclosed is a check covering the fee set forth in 37 C.F.R. 1.17(p), or

(2) \_\_\_ Charge the fee set forth in 37 C.F.R. 1.17(p) to Deposit Account No. 18-0988.

4. Certification (if applicable)

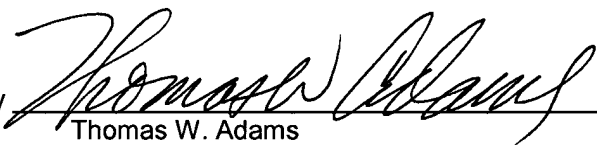
(a) \_\_\_ The undersigned hereby certifies that each item of information contained in this Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than 3 months prior to the filing of this Statement.

(b) \_\_\_ The undersigned hereby certifies that no item of information contained in this Statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the undersigned's knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. 1.56(c) more than 3 months prior to the filing of this Statement.

5. The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 18-0988.

Respectfully Submitted,

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Form PTO-1449 (Modified)	Atty Docket No.	Express Mail
	G0533	ER054909488US
	Applicant: Halliyal et al.	
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT	Filing Date	Group
	September 5, 2003	Not yet known
(Use several sheets if necessary)		

## U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Sub-class	Filing Date if Appropriate
	5,015,502	05/14/91	Strangman et al.	427	248.1	
	5,648,113	07/15/97	Barbee et al.	427	8	
	5,654,035	08/05/97	Ljungberg et al.	427	255.3	
	6,037,003	03/14/00	Gordon et al.	427	255.34	
	6,319,730 B1	11/20/01	Ramdani et al.	438	3	
	6,278,166 B1	8/21/01	Ogle, Jr.	257	411	
	6,406,960 B1	6/18/02	Hopper et al.	438	261	
	6,420,279 B1	07/16/02	Ono et al.	438	785	
	6,407,435 B1	06/18/02	Ma et al.	257	411	
	5,120,672	06/09/92	Mitchell et al.	437	43	
	6,008,091	12/28/99	Gregor et al.	438	261	
	6,171,900 B1	01/09/01	Sun	438	240	
	6,309,927 B1	10/30/01	Au et al.	438	261	
	6,438,030 B1	08/20/02	Hu et al.	365	185.18	
	6,461,905 B1	10/08/02	Wang et al.	438	183	
	2002/0190311 A1	12/19/02	Blomme et al.	257	321	
	2002/0106536 A1	08/08/02	Lee et al.	428	702	
	2002/0115252 A1	08/22/02	Haukka et al.	438	240	
	2002/0142624 A1	10/03/02	Levy et al.	438	786	
	6,573,197	06/2003	Callegari et al.	438	91	
	5,907,766	05/1999	Swanson et al.	438	72	
	6,451,657	09/2002	Yang et al.	438	240	
	6,451,641	09/2002	Halliyal et al.	438	200	
	6,407,435	06/2002	Ma et al.	257	411	

## FOREIGN PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Country	Class	Sub-class	Translation	
						Yes	No

## OTHER ART

Examiner Initial	Author, Title, Date, Pertinent Pages, etc.
	Kukli et al.; "Tailoring the Dielectric Properties of $\text{HfO}_2$ - $\text{Ta}_2\text{O}_5$ Nanolaminates"; Appl. Phys. Lett., Vol. 68 No. 26, 24 June 1996.
	Zhang et al.; "High Permittivity Thin Film Nanolaminates"; Journal of Applied Physics; Volume 87, Number 4, 15 February 2000.

EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Information Disclosure Statement PTO-1449 (Modified)

The identification of any reference is not intended to be, and should not be understood as being, an admission that such publication, in fact, constitutes "prior art" within the meaning of applicable law since, for example, a given reference may have a later effective date than first seems apparent or the reference may have an effective date which can be antedated. The "prior art" status of any reference is a matter to be resolved during prosecution.

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